

REMARKS

Claims 1-7 are pending in the application. Claims 1-2 have been amended and claims 4-7 are newly-added to the application. No new matter has been introduced by the amendment.

Claim Objection

Claims 1 and 2 have precipitated an objection based on the use of several imprecise terms. This rejection is believed overcome in view of the amendment of claims 1 and 2 in which the terms and phrases "such as," "for instance," "preferably," and "in particular," have been deleted. Further, the phrase "characterized in that" has been replaced by the transition "comprises" and "comprising." Also, in claim 1, the redundant phrase "a nickel based electrode structure" has been removed.

In addition to the foregoing amendments, the previously-recited nested ranges for manganese concentration have been removed. Since the applicants deleted the recited manganese ranges in claims 1 and 2, new claims 4-7 have been introduced to recite the various manganese metal atom concentrations previously recited in claims 1 and 2.

Further, claim 1 has been amended to more precisely define the region of the electrode in which the manganese concentration ranges from 0.5 to 5 metal atom %. As amended, claim 1 recites an electrode in which a portion of the electrode extending less than 20 microns from the electrolyte comprises 0.5 to 5 metal atom % manganese. Claim 2 has also been amended to more particularly recite the region of the electrode in which the manganese concentration ranges from 0.5 to 5 metal atom %. As amended, claim 2 recites that a portion of the electrode spaced more than 20 microns from the electrolyte comprises 0.5 to 5 metal atom % manganese.

The foregoing amendments are believed to address the objections presented in the instant office action. Further, the foregoing amendments are believed to clarify claims 1 and 2 with respect to the chemical compositions of the claimed electrode.

Rejection Under 35 U.S.C. § 102(b)

Claims 1 and 2 have been rejected over Japanese Patent Publication JP 5-190183 ("the '183 patent"). This rejection is believed overcome in view of the following remarks.

The applicants' pending claims recite an electrochemical cell having a Ni/YSZ electrode. In accordance with the invention, the manganese concentration within the electrode varies as a function of distance from the electrolyte. In claim 1, the manganese concentration ranges from 0.5 to 5 metal atom % in a region of the electrode less than 20 microns from the electrolyte. Conversely, claim 2 recites a structural in which the manganese concentration varies from 0.5 to 5 metal atom % at a distance of more than 20 microns from the electrolyte. The applicants respectfully assert that the particular electrode features recited in claims 1 and 2 are not suggested or disclosed by the '183 patent.

The applicants respectfully assert that the '183 patent differs from their claimed invention at least because the '183 patent does not suggest or disclose an electrode having a manganese concentration of about 0.5 to 5 metal atom %. The applicants submit herewith a non-certified machine translation of the '183 patent. The '183 patent discloses a first embodiment in which an electrolyte contains 1-15 mol% manganese. (Translation, page 4, par. 0006). The '183 patent also discloses a second embodiment in which the electrode contains 5 to 50 mol% manganese. (Translation, page 5, par. 0009). While the '183 patent discloses an electrode having 5 to 50 mol% manganese, there is no suggestion within the '183 patent for an electrode having a particular manganese concentration that is spatially related to the distance from the electrolyte.

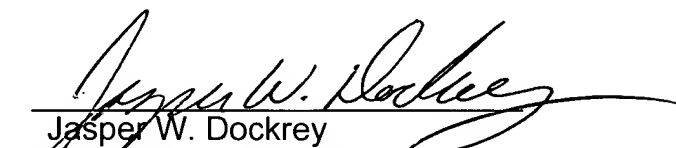
The applicants describe the electrochemical activity of an electrode based on the distance from a sintered center electrolyte (Specification, page 3, ll. 24-25, page 4, ll. 1-3). The particular composition of the electrode is effective at reducing the polarization resistance R_p to values below that

obtained in the electrochemical cells described in the '183 patent (Translation, page 8, ll. 15-25). Further, the electronic conductivity and catalytic activity of the electrode layer is substantially enhanced in electrodes formulated in accordance with the invention (Specification, page 9, ll. 1-6). Improved performance is obtained by tailoring the manganese concentration within the electrode as a function of distance from the electrolyte. Consequently, the invention teaches a particularly advantageous manganese composition in the electrochemical active region of a Ni/YSZ electrode. Accordingly, it is respectfully asserted that the '183 patent does not anticipate the applicants' pending claims, at least because one skilled in the art would not appreciate the beneficial aspects of carefully controlling the manganese concentration as a function of distance from the electrolyte in an Ni/YSZ electrode.

Claims 4-7 further limit the manganese concentration to particular metal atom percentages. These particular manganese metal atom percentages are not suggested or disclosed by the '183 patent.

The applicants have made a novel and nonobvious contribution to the art of electrochemical cell fabrication. The claims at issue distinguish over the cited reference and are in condition for allowance. Accordingly, such allowance is now earnestly requested.

Respectfully submitted,


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